

HISTORY OF MEDICINE

Bleeding and cupping*

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Summary

Bleeding and cupping have been used in medicine since ancient times in the treatment of fevers and local inflammatory disorders. Local bleeding, by 'wet cupping', was effected by a scarificator or by leeches. John Hunter recommended venesection in moderation but preferred leeches for local bleeding. Bleeding as an accepted therapeutic practice went out of vogue in the middle of the nineteenth century as a result of the introduction of modern scientific methods. Dry cupping and the use of leeches, as counter irritants, persisted until the middle of this century.

Introduction

Both bleeding and cupping are amongst the oldest medical manipulations practised by our ancestors. These practices went out of fashion 150 years ago with the onset of the scientific approach to medical practice and the introduction of medical statistics. Bleeding was one of the first casualties as medicine transformed itself from an art to a science. A study of the agonising process that led to the medical profession giving up this hallowed procedure can give us much information concerning the continuing role of traditional procedures in modern medicine.

Herodotus, in 400 BC, records that both bleeding and cupping were already used by the Egyptians whose physicians extensively recommended the application of exhausted cups to the body either for the extraction of blood by scarification, or to produce blistering alone (dry cupping). Cupping was used to diminish headache, restore appetite and improve digestion, remove the tendency to faint, to draw 'matter' to the surface, increase secretions, promote menstrual flow, hasten the crisis of disease, remove too great a disposition to sleep and, if applied behind the ears, to produce a natural and refreshing repose. Bleeding was used locally to lessen local inflammation and for checking haemorrhage. Venesection was regularly used in the treatment of fevers and also for apoplexy. The ancient Greeks used a gourd for cupping. At the apex of the gourd a small aperture was made where the lips could be applied for producing a vacuum. Other cups were made of metal. Hippocrates gave instructions as to the shape and application of cups. He recommended that they should be small in diameter, conical in shape and light in their weight, when the disease for which they are applied is deep seated. When the disease was near the surface, they should be wide. He recommended dry cupping mainly but only a limited use for bleeding or wet cupping. It appears that after Hippocrates there were two schools: those who strenuously recommended bleeding, and

those who practised blood letting with extreme caution. There were those who completely renounced blood letting and cupping. The use of leeches became popular during the reign of Augustus as a result of the teachings of Themison, who preceded Celsus. Celsus was a strong advocate of blood letting by scarification and cupping to relieve local conditions, but preferred venesection for acute disease. Galen was also an advocate of bleeding and cupping and this form of therapy was extremely popular in the later years of the Roman Empire. It was also much recommended by the Arab physicians of the middle ages and the practice spread through Italy and eventually to the rest of Europe during the renaissance. Cupping was much in vogue in Italy for gout and other forms of arthritis. Among the physicians of the seventeenth and eighteenth centuries who recommended cupping were Sydenham, Willis, Pitcairn, Mead and Heberden in England, Boerhaave in Holland and Baron Larrière, Napoleon's surgeon, was also an advocate of bleeding.

BLEEDING BY VENESECTION

Bleeding (Fig. 1) appears to have been a standard treatment for fever in the middle of the eighteenth century (1), although it was not used so much in putrid fevers (typhus and typhoid fever). As might be expected, it was considered of value in the treatment of hypertension, 'cases of labouring pulse with threatened apoplexy, when the patients had drowsy headaches, with inability to stoop down or to turn round without swimming and giddiness in the head' (2).



FIG. 1 Pewter bleeding bowl dated 1671 (capacity 8 fl. oz.).

*Based on a presentation given before the Trustees of the Hunterian Museum at their meeting on 28th October 1981.

Some epidemic fevers were considered more violent than others and these justified heroic bleeding. Bleeding was recommended for inflammation of the lungs, according to the amount of pain, the pounding of the pulse and the difficulty of breathing. The amount of blood extracted on each occasion was usually that which would fill a pint basin (Fig. 2). This was then considered to be equivalent to 20 ounces. Occasionally, this was increased to 35 ounces. The



FIG. 2 18th Century ceramic bleeding (or barber's) bowl (capacity 14 fl.oz.).

first bleeding was generally continued until the patient fainted. Patients could be bled daily, or on alternate days, and might lose up to 95 ounces in three days, or 104 ounces in 4 days. As much as 210 ounces were bled over a six day period. Physicians who bled their patients were often considered to be more successful in the treatment of chest infections than those who did not. Much was made of the appearance of the blood in the basin. The points discussed were the redness, thickness and toughness of the clot. If the yellow substance on the surface of the clot (coagulable lymph) formed a deep cup, this was an indication for further abstraction of blood. The size of the incision was also important, thus a wide incision into a large vein would bring about early syncope as a result of rapid loss of blood, and so to procure a large quantity of blood a smaller opening would be used. Patients were regularly bled to syncope.

John Hunter, in accordance with his time, both recommended and used bleeding in his practice. He particularly recommended bleeding for the treatment of inflammation (3), as well as for apoplexy. Bleeding was one of the standard methods of 'weakening' inflammation. The others were purging, rest and a restricted diet. However, he recommended moderation, taking away just the amount of blood that would lessen the violence of the inflammatory process. The amount he removed also depended on the constitution of the patient. He considered that one bleeding was rarely sufficient and recommended up to five. He paid considerable attention to the appearance of the blood. If it was thick and viscous and then became cupped when it clotted, future bleedings could be performed without much risk*. If the blood clotted poorly and lay flat in the dish, further bleeding was contraindicated. If there was a poor output, this was an indication for action. He particularly recommended bleeding in the treatment of ocular inflammation, but did not consider it indicated for inflammation of the tonsils. Hunter paid considerable attention to the pulse when bleeding his patients. Thus, a hard quick pulse was generally an indication for bleeding. Where the pulse was small and frequent, bleeding was performed with caution. He also used local bleeding, particularly in patients in whom venesection was contraindicated: in such cases, he preferred the use of leeches as the wound of the leech caused little irritation. Hunter considered bleeding to be sometimes beneficial in smallpox and gonorrhoea but in cases of gout and erysipelas, although occasionally necessary, often very injurious (Fig. 3). He recommended the local use of leeches to the scrotum for swollen testicles due to gonorrhoea and to the perineum for inflammation of the bladder from the same cause (4). It would appear that Hunter had a preference for leeches as opposed to wet cupping for local bleeding. Finally, he observes in his *Lectures on the Principles of Surgery* (5):

'Bleeding, however, is a remedy of so much importance that it should be employed in all cases with great caution: yet not more than appears really necessary. I cannot perceive why bleeding should have such an effect on inflammation as it often has. We cannot account for it simply on the mechanical principle of lessening the quantity of blood, because this can never remove the cause of inflammation'.

* The adjective *sizy* was used to describe such blood in the 18th century.

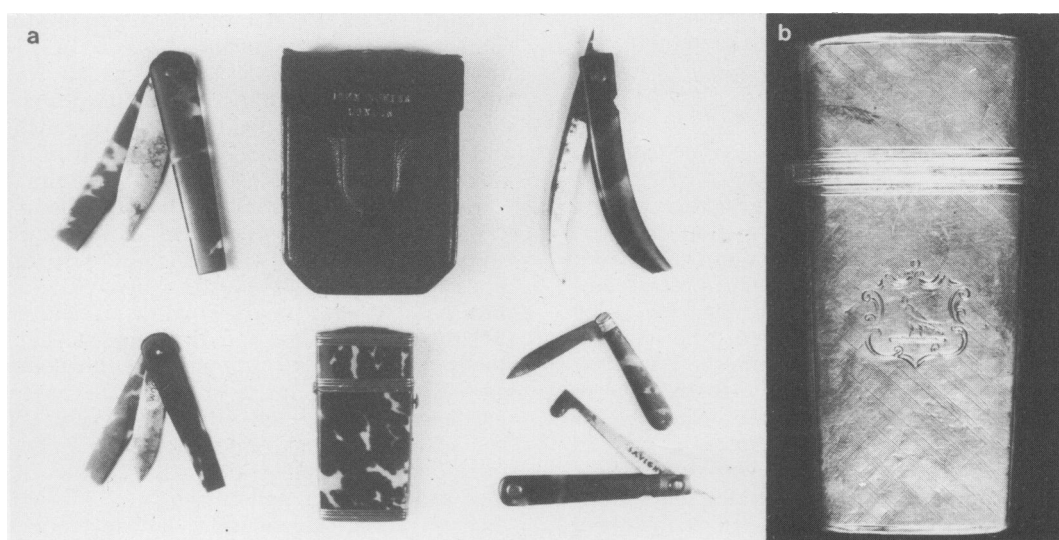


FIG. 3 (a) John Hunter's lancets and lancet cases. (b) Silver lancet case with College crest (pre 1822) (Hallmark: Birmingham 1841; Maker: Nathaniel Mills).

LEECHES

The application of leeches (6), though used in Asia from time immemorial, was first recorded as a therapeutic practice in the 2nd Century BC by Nicander of Colophon. The medicinal leech, *Hirudo medicinalis*, can ingest up to five times its own weight in blood and some early writers even recommended snipping off the hind end to improve blood flow, others advised passing a thread through the tail as a precaution against accidental swallowing by the patient. Native to Asia and Europe, and introduced into North America, the leech was extensively cultivated for medical use. For centuries the leech has been used for a wide variety of ailments, a ring of a dozen leeches round the temples would cure a headache while fifty on the abdomen would cure anything from tumours to obesity! Import figures (5 million into England in 1824 and 41 million into France in 1833) indicate their supposed value as a 'cure-all'. A fall in production in the middle of the 19th Century, due to changing geographical factors in Europe, probably contributed to the decline in their application towards the end of the century.

The decline of the therapeutic use of bleeding

Bleeding always had its antagonists as well as protagonists. It had passed through a period of disuse between Roman times and the renaissance. Moreover, there were times when 'inflammatory fevers', for which bleeding was indicated, were not so common as previously. Thus, John Hunter himself states that there was less indication in his times to have recourse to the lancet (Fig. 3) in the treatment of fevers than in former times, and that the lancet in the treatment of inflammation was 'much more laid aside' (Fig. 4). Allison in 1864 observed that at the end of the eighteenth century

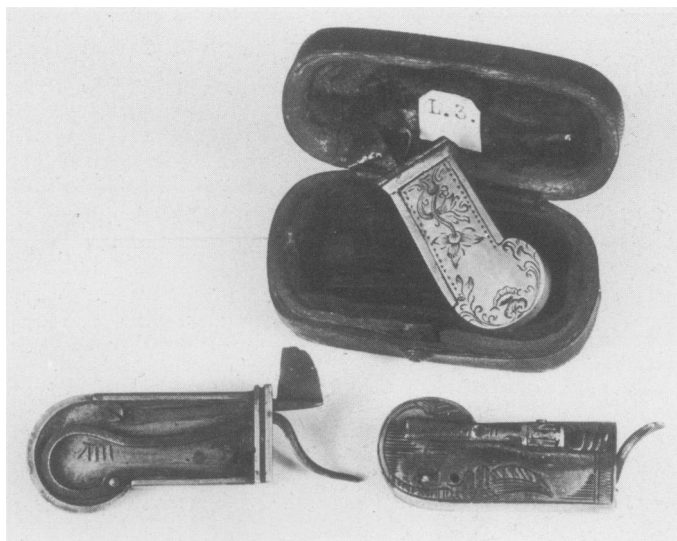


FIG. 4 18th Century spring fleams or German bleeding lancets.

and the beginning of the nineteenth century, the types of fevers observed in England were not those that required bleeding. However, by 1812, bleeding was again considered necessary and 'In June 1822—a year of the most violent inflammatory action I ever saw before or since—we bled heroically'. George IV, when Prince Regent, received repeated bleedings for inflammation of the lungs.

However, this was the last burst of activity. In 1835 Pierre Charles Alexandre Louis of Paris published his '*Recherches sur les effets de la saignée dans quelques maladies inflammatoires*' (7) in which, by the use of statistical approach, he was able to show that patients with a number of inflammatory diseases including pneumonia, who had been bled, made no better recovery than those who had not been treated.

Louis, who was much admired by Osler (8), was one of the first to keep accurate and full notes on all his patients,

including details of post mortem examination, if the patient died. These were collected in a tabular form to facilitate comparison. He could then rapidly work out how often a particular phenomenon occurred in a particular disease. Using the numerical method he became the first to associate ulceration of the Peyer's patches with typhoid fever, and to demonstrate that chronic peritonitis was always associated with tuberculosis. Louis in 1835 reported his observations on 78 cases of pneumonia of which 28 proved fatal. He came to the conclusion that blood letting had a limited influence on the duration of the disease and on its course. If anything, blood letting early on in the disease increased the mortality, especially in the elderly. In addition, venesection had little effect on the clinical signs and symptoms of the condition, the progress of which was never arrested by this procedure. A further study of 29 patients with 4 fatalities confirmed his conclusions. He also observed 11 cases of erysipelas of the face, five of which were bled and six of which were not bled, and came to a similar conclusion that venesection also had a limited use in this condition. Although subsequent studies from the Massachusetts General Hospital were not so conclusive, the practice of blood letting for inflammatory diseases fell into disrepute over the next thirty years. There were a number of papers discussing the controversy over the use of blood letting over this period including a series by W. O. Markham, the Editor of the *British Medical Journal*, but the literature becomes strangely silent after 1865. Although the use of this technique in the treatment of inflammatory conditions is unlikely to be revived, one wonders whether it might yet have a place in the treatment of thrombotic disorders, reviving its old use in the treatment of apoplexy. The use of leeches continued for longer. They contain hirudin, a polypeptide of molecular weight approximately 20 000 with anticoagulant properties. It is of interest that in Savill's System of Clinical Medicine, as late as 1950 (9), the use of leeches was still recommended in the treatment of acute pericarditis. It is stated: 'if pain is great, relief is often obtained from the application of four or five leeches over the precordium. Blisters are occasionally used'.

Wet and dry cupping

As mentioned above, 'wet cupping' was used for the treatment of local areas of inflammation. In this procedure up to 20 ounces of blood could be withdrawn at a time from a local site, using 5 cups and obtaining 4 ounces per cup. Wet cupping was a complex procedure (Bayfield, 1823) and was generally performed only by a few experienced practitioners (10). Although practised in England during the early nineteenth century, it was rarely used in Scotland and Ireland. As well as the cups, a lighted torch was necessary to evacuate the cups and a scarificator to produce the bleeding (Figs 5 and 6). The scarificator was a spring box containing up to seven rows of little 'lancets' which projected from the face of the box to a distance of one quarter of an inch. ($\frac{1}{4}$ inch was used for cupping behind the ears, $\frac{1}{8}$ inch for the temple and $\frac{1}{16}$ inch for the scalp). After the scarificator had been set and the sites selected, both the site and the cups were warmed in water. With a torch in one hand and the cup in the other, the cup was placed on the skin with one edge raised about one and a half inches. The lighted torch was placed under the glass towards the centre for 2 seconds and then quickly withdrawn, creating a vacuum which would suck the glass from the operator's fingers. The skin would rise slowly into the glass, occupying one third of the volume. The glass was left on for a minute, then removed and the scarificator applied and its lancets sprung through the skin. The scarificator was removed rapidly. The glass was then immediately reapplied and exhausted so that blood could flow into the evacuated cup.

Dry cupping or vesication was the production of a blister by the application of the cup alone (Fig. 6). Various ingenious modifications of the plain glass cup were produced in the early nineteenth century, including those which could

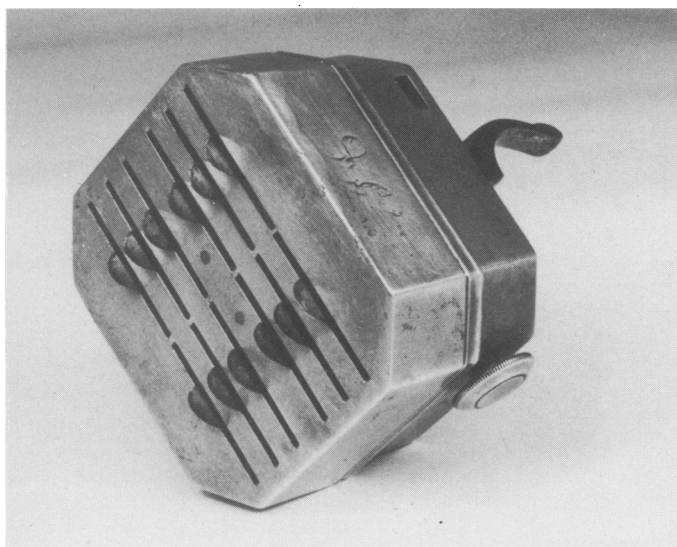


FIG. 5 Silver scarificator cocked to show 12 blades.

be evacuated by a pumping syringe and incorporated a lancet that could be driven into the skin. These instruments would obviate the use of double evacuation by means of the lighted torch.

Wet cupping appears to have been discontinued about the same time as venesection. However, dry cupping as a counter-irritant continued in use in the treatment of pneumonia and rheumatic conditions well into the first half of the twentieth century, when it was often applied by barbers or masseurs. One can find little record of the use of cupping into the second half of this century. It is of interest that Louis (1835) also made observations on the effect of dry cupping (vesication). He studied its use in the treatment of pleurisy, pneumonia and pericarditis and discovered that it had no evident influence on the course of the disease. He states, 'And how then can we believe that the effect of a blister is to check an inflammation, when this blister is one inflammation superadded to another?' Despite his observations it is likely that dry cupping persisted until the chemotherapy and antibiotic era through its action as a counter-irritant.

References

- 1 Gregory J. *Elements of the practice of physic*. Second Edition. W. Strahan and T. Cadell, London, 1774.
- 2 Allison, W. Types of fever and blood letting. *Brit Med J* 1864:624-626.
- 3 Hunter, J. *Treatise on the blood, inflammation and gun-shot wounds*, London, 1794.
- 4 Hunter, J. *Treatise on venereal disease*. London, 1786.
- 5 Hunter, J. *Lectures on principles of surgery*. In: *The works of John Hunter, FRS. with notes*. Vol. 1. Ed. J. F. Palmer. Longman, Rees, Orme, Brown and Longman, London, 1835.



FIG. 6 Cupping set (circa 1830) with 6 glass cups and plated spirit burner.

- 6 Hudson, J. & Son. *A treatise on the medicinal leech, containing remarks on the history, diseases and management of them—Together with the observations of an eminent physician on sanguisuction*. William Stephenson, Hull and Simpkin, Marshall & Co., London, 1841.
- 7 Louis, P.Ch.A. *Researches on the effects of blood-letting on some inflammatory diseases and the influence of tartarized antimony and vesication in pneumonitis*. Hilliard, Gray & Co., Boston, 1836.
- 8 Osler, W. *An Alabama student, and other biographical essays*. Oxford Univ. Press, 1908.
- 9 Warner, EC. 'Savill's system of clinical medicine'. p. 65. Edward Arnold & Co., London, 1950.
- 10 Bayfield, S. *A treatise on practical cupping*. E. Cox and Son, London, 1823.